

REMARKS

Claims 4-6, 13-17, 30-31 and 33-43 are pending in the application.

Claims 33, 38, 30-31 and 40-43 have been rejected.

Claims 4-6, 13-17, 34-37 and 39 have been objected to.

Claim 40 has been amended as set forth herein.

Claims 4-6, 13-17, 30-31 and 33-43 remain pending in this application.

Reconsideration of the claims is respectfully requested. The Applicants make the aforementioned amendments and subsequent arguments to place this application in condition for allowance. Alternatively, the Applicants make these amendments and offer these arguments to properly frame the issues for appeal. In this Response, the Applicants make no admission concerning any now moot rejection or objection, and affirmatively deny any position, statement or averment of the Examiner that was not specifically addressed herein.

I. ALLOWABLE SUBJECT MATTER

The Examiner objected to Claims 4-6, 13-17, 34-37 and 39 as being dependent upon a rejected base claim, but suggested that Claims 4-6, 13-17, 34-37 and 39 would be allowable if it were rewritten in independent form including all the limitations of the base and intervening claims. Applicants thank the Examiner for this suggestion but elect not to rewrite Claim 4-6, 13-17, 34-47 and 39 at this time.

II. CLAIM REJECTIONS -- 35 U.S.C. § 103

Claim 33 is rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,424,121 to Kubota (“*Kubota*”) and U.S. Patent No. 6,449,368 to Davis, et al. (“*Davis*”). The Applicants respectfully traverse the rejection.

Claim 38 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kubota* and U.S. Patent No. 7,242,782 to Kasai, et al. (“*Kasai*”). The Applicants respectfully traverse the rejection.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142, p. 2100-133 (8th ed. rev. 4, October 2005). Absent such a *prima facie* case, the Applicants are under no obligation to produce evidence of nonobviousness. *Id.* To establish a *prima facie* case of obviousness, three basic criteria must be met: *Id.* First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *Id.* Second, there must be a reasonable expectation of success. *Id.* Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *Id.* The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants’ disclosure. *Id.*

Independent Claim 33 recites an audio processor that includes “a virtualizer configured to process audio information to virtualize at least one speaker such that, from a listener’s perspective, sounds appear to come from at least one direction where a physical speaker is not present, the

virtualizer comprising a first feedback crossover path configured to receive, delay, and filter signals output from the virtualizer.”

The Office Action argues that the combination of *Kubota* and *Davis* teaches the aforementioned features of Claim 33. The Office Action concedes that *Kubota* fails to teach the virtualizer comprising a first feedback crossover path configured to receive, delay and filter signals output from the virtualizer. (*Office Action*, page 4). Nonetheless, the Office Action rejects independent Claim 33 contending that *Davis* provides this necessary disclosure. The Office Action states that “it would have been obvious for one of ordinary skill in the art to have modified the combination with incorporating the first feedback crossover path configured to receive, delay, and filter signals output from the virtualizer so as to create phantom or virtual images-sound apparently come from directions of the original channel.”

Kubota relates to an audio processing apparatus that performs virtual acoustic image localization processing for sound source signals. (*Kubota*, Abstract). *Kubota* teaches that virtual acoustic image localization is accomplished by performing appropriate filter processing of monaural audio signals based on the transfer functions from the position at which the acoustic image is to be localized to both the listener's ears (HRTF: Head Related Transfer Function) and the transfer functions from a pair of speakers placed in front of the listener to both the listener's ears, the acoustic image can also be localized in places other than the positions of the pair of speakers, for example, behind or to one side of the listener. (*Kubota*, col. 1, lines 31-42).

Davis relates to an audio crosstalk-cancelling network. (*Davis*, Abstract). *Davis* teaches that, because it restores the M source channels to their original directions, the acoustic-crossfeed canceller has the ability to create phantom or virtual images--sounds apparently come from directions M rather than loudspeaker N positions, which N positions may be differently located than the M sources with respect to the listening positions P. (*Davis*, col. 3, lines 38-43).

In *Ex Parte Rinkevich et al.* (BPAI 2007-1317, non-precedential), the BPAI applies KSR to reason that a skilled person would not look to a second patent to solve a problem already solved by a first patent (and by the patentee). The BPAI wrote that in “the instant case, we conclude that a person of ordinary skill in the art having common sense at the time of the invention would not have reasonably looked to Wu to solve a problem already solved by Savill. Therefore, we agree with Appellants that the Examiner has impermissibly used the instant claims as a guide or roadmap in formulating the rejection.”

In this application, the Office Action has impermissibly used the instant claims as a guide or roadmap for forming the rejection. *Kubota* already provides for virtual acoustic image localization. A person of ordinary skill in the art having common sense at the time of the invention would not have reasonably looked to *Davis* to solve a problem already solved by *Kubota*.

Accordingly, the Applicants respectfully request that the § 103 rejection with respect to Claim 33, and its dependent claims, be withdrawn.

Independent Claim 38 recites a device that includes “a controller configured to cause the virtualizer to virtualize the at least one speaker by individually altering a frequency response of one or more of the filters and a delay of one or more of the delay lines.”

The Office Action argues that the combination of *Kubota* and *Kasai* teaches the aforementioned features of Claim 38. The Office Action concedes that *Kubota* fails to teach a controller configured to cause the virtualizer to virtualize the at least one speaker by individually altering a frequency response of one or more of the filters and a delay of one or more of the delay lines. (*Office Action*, page 5). Nonetheless, the Office Action rejects independent Claim 38 contending that *Kasai* provides this necessary disclosure. The Office Action states that “it would have been obvious for one of ordinary skill in the art to have modified the combination with having such virtualizing the loudspeakers by individually altering a frequency response of one or more of the filters and a delay of one or more of the delay lines for improving the accuracy in low component of the sound image.”

Kasai relates to an audio processing circuit. (*Kasai*, Abstract). *Kasai* teaches that, Finite Impulse Response (FIR) filters are employed for crosstalk-cancelling. (*Kasai*, col. 11, line 59-col. 12, line 27). *Kasai* expressly teaches that the FIR filters are “set” to specified values (e.g., a first filter set to 128 taps and the second filter set to 32 taps) to improve accuracy in the low frequency component. (*Kasai*, col. 12, lines 23-58). However, *Kasai* does not teach or suggest that the filters are individually altered. Rather, *Kasai* expressly states that the taps are “set.” This is, basically, an initial value that is unaltered after being set. In contrast, Claim 38 recites that the controller is

configured to cause the virtualizer to virtualize the at least one speaker by individually altering a frequency response of one or more of the filters.

Further, *Kasai* does not teach that a delay of one or more of the delay lines is altered. The cited portion of *Kasai* states:

Delay means 205, 206 and 208 perform delay processing which compensates a time required for the processing performed by the filter bank. The delay means 205 performs delay processing in an amount of three sampling data, the delay means 206 performs delay processing in an amount of one sampling data, and the delay means 208 performs delay processing in an amount of seven sampling data.

According to this embodiment employing the filter bank, a cross-talk cancel filter having a high ability of 128 taps can be obtained while the total tap number of the FIR filters 201, 202, 203 and 204 is kept 68 taps. (*Kasai*, col. 12, lines 36-47).

Kasai only teaches that delay means 205, 206 and 208 exist and perform delay processing of data. *Kasai* does not teach that a delay in one or more of the delay means is altered. In contrast, Claim 38 recites that the controller is configured to cause the virtualizer to virtualize the at least one speaker by individually altering a frequency response of one or more of the filters and a delay of one or more of the delay lines. Therefore, *Kasai* does not provide a disclosure that remedies the conceded deficiency of *Kubota*.

Accordingly, the Applicants respectfully request that the § 103 rejection with respect to Claim 38, and its dependent claims, be withdrawn.

III. CLAIM REJECTIONS -- 35 U.S.C. § 102

Claims 40-41 and 43 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Davis*. This rejection is respectfully traversed.

Claims 42 and 30-31 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Davis* and *Kasai*. This rejection is respectfully traversed.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. MPEP § 2131, p. 2100-76 (8th ed., rev. 4, October 2005) (*citing In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990)). Anticipation is only shown where each and every limitation of the claimed invention is found in a single prior art reference. *Id.* (*citing Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)).

Currently amended independent Claim 40 recites, *inter alia*, a method that includes: generating first output signals for a first physical speaker; generating second output signals for a second physical speaker; and providing at least one of the first output signals and the second output signals to at least one feedback crossover path operable to receive, delay, and filter the at least one of the first output signals and the second output signals.” The claim further recites “wherein generating the second output signal comprises combining an output of the at least one feedback crossover path and a first forward crossover signal received from a first forward crossover path operable to receive, delay and filter a first input signal.

The Applicants respectfully submit that *Davis* does not teach each and every element as arranged and recited in Claim 1. The Office Action argues that *Davis* (Figures 1 and 5 and col. 2, lines 34-46 and 64-67) teaches a method comprising generating first output signals for a first physical speaker and generating second output signals for a second physical speaker; and providing at least one of the first output signals and the second output signals to at least one feedback crossover path operable to receive, delay, and filter the second output signals. (*Office Action*, page 6).

Davis, however, does not teach or suggest a first forward crossover signal received from a first forward crossover path operable to receive, delay and filter a first input signal. *Davis* does not teach a forward crossover path. In the rejection of Claim 43, the Office Action contends that *Davis* (Figure 5, elements 64, 74) teach providing one or more of the filtered input signals to one or more forward crossover paths. (*Office Action*, page 6). However, filter (64) and delay (74) are not included in a forward crossover path. Rather, these elements are included in the output path, which is not crossed-over or whose output is not fed back. Therefore, *Davis* does not teach or suggest a first forward crossover signal received from a first forward crossover path operable to receive, delay and filter a first input signal.

Accordingly, the Applicants respectfully request that the § 102 rejection with respect to Claim 40, and its dependent claims, be withdrawn.

CONCLUSION

As a result of the foregoing, the Applicants assert that the remaining Claims in the Application are in condition for allowance, and respectfully request an early allowance of such Claims.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicants respectfully invite the Examiner to contact the undersigned at the telephone number indicated below or at wmunck@munckcarter.com.

The Commissioner is hereby authorized to charge any additional fees (including any extension of time fees) connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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